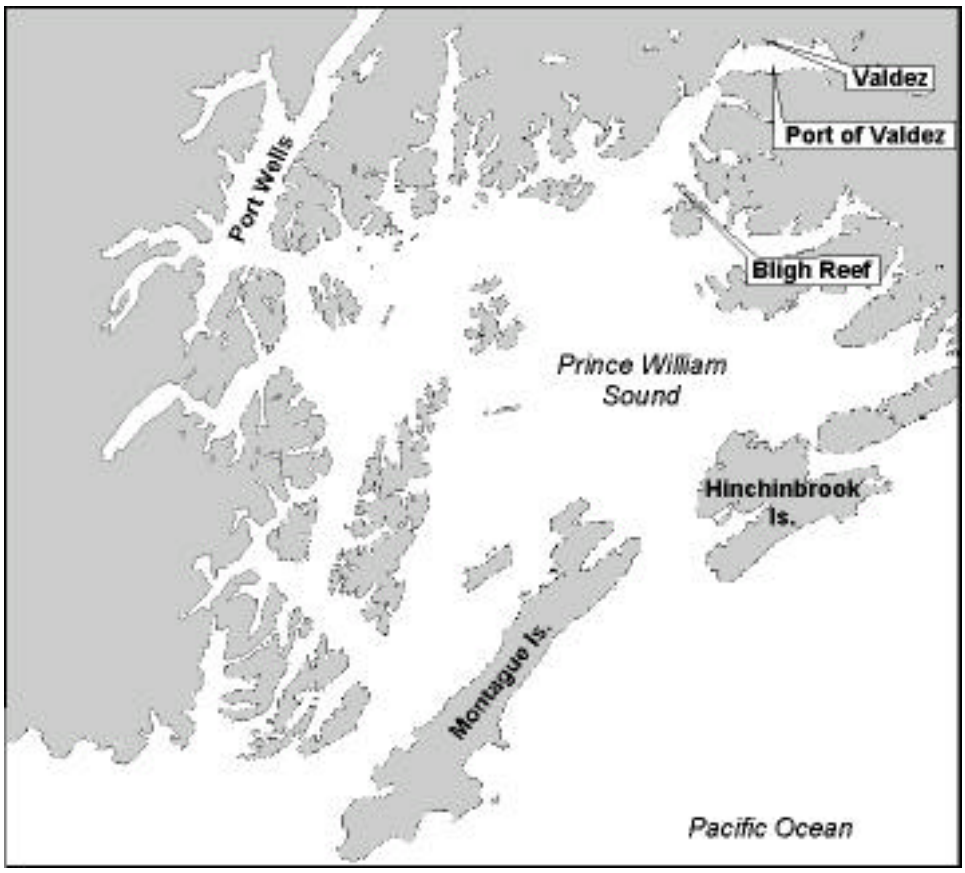
User's Guide

Welcome to the Location File for Prince William Sound, an embayment of the Gulf of Alaska, located in south-central Alaska. Prince William Sound is bordered on the west by the Kenai Peninsula; Montague Island and Hinchinbrook Island lie at the main entrance to the sound. Prince William Sound is well known as the location of the 1989 Exxon Valdez oil spill, which spilled nearly 11 million gallons of oil into its biologically rich waters.



NOAA created Location Files for different U.S. coastal regions to help you use the General NOAA Oil Modeling Environment, GNOME. In addition, on a case-by-case basis, NOAA develops international Location Files when working with specific partners. Each Location File contains information about local oceanographic conditions that GNOME uses to model oil spills in the area covered by that Location File. Each Location File also contains references (both print publications and Internet sites) to help you learn more about the location you are simulating.

As you work with the Location File for Prince William Sound, GNOME will prompt you to:

1. Choose the model settings (start date and time, and run duration).
2. Input the wind conditions.

GNOME will guide you through choosing the model settings and entering the wind conditions. Click the Help button anytime you need help setting up the model. Check the “Finding Wind Data” Help topic to see a list of web sites that publish wind data for this region.

More information about GNOME and Location Files is available at http://response.restoration.noaa.gov/software/gnome/gnome.html .

Technical Documentation

Background

Prince William Sound is one of the larger estuaries in North America. Its waters have a surface area of approximately 10,000 square kilometers. Rivers and a significant number of tide-water glaciers supply fresh water to the sound. The circulation is thought to be primarily tidally driven.

Prince William Sound has two main connections to the Gulf of Alaska: Hinchinbrook Entrance and Montague Strait, with some smaller channels on the eastern side. Three smaller fjords connect to Prince William Sound and probably affect the circulation: Port Valdez, Port Wells and Orca bay.

Current Patterns

The Prince William Sound Location File uses five current patterns to simulate the circulation and tides. The tides at Hinchinbrook Strait, Port Wells, and Montague Strait are each simulated with a single current pattern. The tides in Valdez Arm and Port Fidalgo[1] are simulated with the same current pattern. The fifth current pattern simulates a net flow of about .5 knot into Prince William Sound through Hinchinbrook Entrance and out of Prince William Sound through Montague Strait and, to a lesser extent, Latouche, Elrington, and Prince of Wales Passages.

References

You can get more information about Prince William Sound from these publications and web sites.

[1] Port Fidalgo was added in the 6/05/2000 Location File update.

Oceanographic

Johnson, W.R., T.C. Royer, and J.L. Luick (1988). On the Seasonal Variability of the Alaska Coastal Current. Journal of Geophysical Research 93(C10): 12,423-12,437.

Niebauer, H.J., T.C. Royer, and T.J. Weingartner (1994). Circulation of Prince William Sound, Alaska. Journal of Geophysical Research 99(C7): 14,113-14,126.

Royer, T.C. (1979). On the effect of precipitation and runoff on the coastal circulation in the Gulf of Alaska. Journal of Physical Oceanography 9: 555-563.

Royer, T.C. (1981). Baroclinic transport in the Gulf of Alaska II: A fresh water driven coastal current. Journal of Marine Research 39: 251-266.

Royer, T.C. (1982). Coastal fresh water discharge in the northeast Pacific. Journal of Geophysical Research 87: 2017-2021.

Wind and Weather

NOAA National Weather Service, Alaska Region
http://www.alaska.net:80/~nwsar
Marine forecasts for Alaska in text form. Marine weather images, satellite images, and links to other Alaska weather web sites.

Prince William Sound Weather Data and related links
http://www.pwssc.gen.ak.us/sea/weather/weather.html
Links to Prince William Sound and Alaska weather data.

NOAA National Weather Service (NWS)
http://www.nws.noaa.gov
Current weather observations, forecasts, and warnings for the entire U.S.

Oil Spill Response

NOAA Hazardous Materials Response Division (HAZMAT)
http://response.restoration.noaa.gov
Tools and information for emergency responders and planners, and others concerned about the effects of oil and hazardous chemicals in our waters and along our coasts.